FIG. 3

FIG. 4

FIG. 5
KINKED WIRE COIL SHUNT
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ABSTRACT OF THE DISCLOSURE

In the art of electric blasting caps having terminally uninsulated leg wires, a shunt or coil wire offset in a kinked configuration about the uninsulated portions of the leg wires so that the leg wires and coil wire are in kinked contact.

This invention relates to a safety device for electric initiators and more particularly to a wire coil shunt which is positioned around the uninsulated portion of lead-in or leg wires of electric initiators and kinked in position thereon.

Electric blasting caps are known to be comprised of an elongated metal casing in which an explosive charge is contained at one end. Two leg wires are extended into the opposite end of the casing and connected thereby means of a bridge wire which is embedded in an explosive composition which is readily ignited. The terminal ends of the leg wires furthest from the cap are normally supplied uninsulated so as to allow for making electrical contact to a suitable source.

It is well known that because of the uninsulated portion of the leg wires leading to electric initiators acts to establish a short circuit between the leg wires, so that any stray electrical current brought into contact with one of the leg wires will not go to the initiator and cause a premature or accidental initiation of such caps. For example, the uninsulated leg wires may come into contact with a live circuit or strain electric current source.

The positioning of the present shunt on the uninsulated portion of the leg wires leading to electric initiators acts to establish a short circuit between the two leg wires, so that any stray electrical current brought into contact with one of the leg wires will not go to the initiator and cause a premature or accidental explosion. The present shunt is particularly adapted to be used on leg wires of electric blasting caps during the periods while they are being stored, transported and the period during which they are being handled at the blasting site prior to connecting the leg wires to an electrical source for firing.

Commercial electric blasting caps are generally equipped with insulated leg wires the terminal ends of which are not insulated for a length of about 1½ inches to about 3 inches. These uninsulated ends are provided for connecting the leg wires to a proper electrical source for initiation purposes. It is around this uninsulated portion of the leg wires that the present shunt is positioned in a kinked or offset configuration so as to bring each leg wire into contact with the other and into contact with the shunt. In one embodiment of the present invention the shunt is kinked in such a manner so as to be in positive contact with the leg wires at points within the coil shunt wherein the leg wires enter and leave the kinked portion and also at the point of greatest depression of such a shunt. In another embodiment of the present invention the shunt is kinked into positive contact with the leg wires only at points within the coil wherein the leg wires enter and leave the offset portions of the kinked shunt. However, according to the present invention positive contact between the leg wires and the shunt may be made at any point or multiplicity of points within the length of the present shunt.

The present shunt may be applied to leg wires by threading the uninsulated portion of such wires through the center of a coil of wire or the coil may be formed by winding the shunting wire about the leg wires. The shunting wire coil and leg wires threaded therethrough are then deformed or kinked by any suitable pressure means so as to bring about the desired contact. Through the use of such kinked shunt maximum security against the shunt slipping off is achieved. The inside diameter of the present coiled shunt is suitably of such diameter to accommodate the width of two uninsulated leg wires so that there will be very little free space.

The inside diameter of the particular shunt to be used on any given leg wires in accordance with the present invention is selected so that even though the present shunt is not compressed into positive contact with the leg wires throughout the entire length of the shunt, it is most likely that the leg wires will contact the present shunt at many points throughout its length.

The spiral or coil wire shunt of the present invention may be made of any suitable metal, for example, copper, lead, aluminum or any other conductive metal which can be formed into wire and which is capable of being kinked around leg wires and remaining in that configuration. The present shunts may be of any length that are practical for application around the uninsulated portion of the leg wires of a blasting cap. For example, the present shunts may be from about ½" to about 3" in length.

For greatest protection it is recommended that the present shunt be positioned so as to abut against the terminal ends of the insulation upon the leg wires furthest from the blasting cap casing. Since the insulating material protects the leg wires from the shunt inwardly toward the blasting cap casing and the shunt protects the blasting cap from the point of its application, outwardly the electric bursting cap shunted according to this invention cannot be exploded by stray current because no difference in potential can be created between the two leg wires. Additionally, the shunt may be applied away from the insulation on the terminal ends of the leg wires and still provide a great amount of safety against accidental firing.

When it is desired to remove the present kinked coil shunt from the leg wires of a blasting cap, it may be stripped longitudinally from the leg wires. Such stripping of the kinked coil shunt tends to clean the uninsulated leg wires so as to provide for good contact to a suitable electric source for initiation purposes.

The uniqueness of the present invention will be apparent from the following description of the invention taken in connection with the accompanying drawings which illustrate specific embodiments wherein:

FIG. 1 is an enlarged fragmentary side view of a shunt of this invention applied on leg wires of an initiator.

FIG. 2 is an enlarged fragmentary side view of a modified application of the present shunt on lead wires of an initiator.

FIG. 3 is a cross-sectional view of the shunts applied in FIG. 1 and FIG. 2 along the lines A—A.

FIG. 4 is a cross-sectional view of the shunts applied in FIG. 1 and FIG. 2 along the lines B—B.

FIG. 5 is a side elevation of an electric blasting cap with connecting lead wires having a kinked wire shunt applied thereto.

Referring now to the drawings in which like numerals are employed to designate like parts throughout the numeral 11 refers to an electric blasting cap assembly comprising blasting cap 13 and copper leg wire 15 and 15'. Leg wires 15 and 15' are covered with an insulating material 17 and 17' except for the terminal portions which are not insulated. A coil of conductive wire 19 is placed around the uninsulated ends of leg wires 15 and
15', and kinked in position as shown alternatively in FIG. 2 and FIG. 3. Several points of contact between the leg wires 15 and 15' and shunt 19 as applied in FIG. 1 and FIG. 2 are indicated in FIGS. 3 and 4 as 25, 27, 29 and 31. However, the shunt of the present invention may be kinked or offset in any configuration so long as the shunt is kinked to insure adequate contact and locking in position.

What is claimed is:

A safety device for an electric initiator which comprises in combination, leg wires having uninsulated end portions and a shunt of coiled wire, said shunt of coiled wire disposed about a length of said end portions and offset in a kinked configuration therewith to insure adequate contact and locking in position.